

CLAIMS



1. A Process for the preparation of an ion exchange membrane which can be used as a separator in a fuel cell in the form of a film which essentially consists of at least one polymer, by:
  - (a) activating the film,
  - (b) subsequently grafting styrene or chloromethyl styrene groups dissolved in a solvent to the activated film,
  - (c) subsequently functionalizing the grafted groups by carrying out a sulfonation by means of a solution comprising a sulfonating agent and then carrying out a hydrolysis by means of a basic solution to form sulfonate sites on the styrene groups and alcohol sites on the chloromethyl styrene groups.
2. The process of claim 1, wherein the polymer is a fluorinated olefin polymer.
3. The process of claim 2, wherein the fluorinated olefin polymer consists essentially of ethylene and tetrafluoroethylene.
4. The process of any one of the preceding claims, wherein the activation is carried out by irradiating with ionizing radiation.
5. The process of any one of the preceding claims, wherein the volume ratio of styrene:chloromethyl styrene in the grafting solution is between 60:40 and 85:15.
6. A process for the preparation of a separator for a fuel cell in the form of a film which consists essentially of at least one polymer, by:
  - (a) converting the film to a ion exchange membrane by a process according to any one of the preceding claims,
  - (b) then metalizing each of the two sides of the membrane so obtained.

**Translation of the claims of DE 198 26 702 A1**

- 7. The process of the preceding claim, wherein the membrane is metalized by means of an alloy consisting predominantly of platinum and ruthenium.**
- 8. Ion exchange membrane obtainable by a process according to any one of claims 1 to 5.**
- 9. Separator for a fuel cell obtainable by a process according to one of claims 6 or 7.**
- 10. Fuel cell comprising a separator according to the preceding claim which is fed with a fuel on alcohol basis.**